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EXAMINER
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1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3  
4 BEFORE THE BOARD OF PATENT APPEALS  
5 AND INTERFERENCES  
6

7  
8 *Ex parte* JEFFREY CLIFFORD MOGUL, KEITH ISTVAN FARKAS,  
9 PARTHASARATHY RANGANATHAN, AND EDUARDO S. PINHEIRO  
10

11  
12 Appeal 2007-1654  
13 Application 10/033,404<sup>1</sup>  
14 Technology Center 2100  
15

16  
17 Decided: February 5, 2008  
18  
19

20  
21 Before ALLEN R. MACDONALD, MARC S. HOFF, and  
22 CAROLYN D. THOMAS, *Administrative Patent Judges*.  
23

24 THOMAS, C., *Administrative Patent Judge*.  
25

26 DECISION ON APPEAL  
27

28 I. STATEMENT OF THE CASE

29 Appellants appeal under 35 U.S.C. § 134 from a final rejection  
30 of claims 1-39 entered February 26, 2006. We have jurisdiction under  
31 35 U.S.C. § 6(b).

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<sup>1</sup> Application filed December 27, 2001. The real party in interest is Hewlett-Packard Development Company, L.P.

1           We reverse the rejections under 35 U.S.C. § 103, and enter a new  
2 ground of rejection as to claims 1-10 and 37 under 35 U.S.C. § 101.

3  
4                                   A. INVENTION

5           Appellants invented a system, method, and computer program product  
6 for providing energy-efficient prefetching of files in a network environment.  
7 The system uses a prefetch prediction model having energy usage  
8 parameters to predict the impact of prefetching specified files on the  
9 system's energy usage. (Spec., Abstract).

10  
11                                  B. ILLUSTRATIVE CLAIM(S)

12           The appeal contains claims 1-39. Claims 1, 11, 21, 32, and 37-39 are  
13 independent claims. As best representative of the disclosed and claimed  
14 invention, claims 1, 32, and 37 are reproduced below:

15           1.     A computer program product for use in conjunction with a  
16 client computer system having at least one application having instructions  
17 for specifying files to be fetched from a server, the computer program  
18 product comprising a computer readable storage medium and a computer  
19 program mechanism embedded therein, the computer program mechanism  
20 comprising:

21  
22                   a prefetch prediction model including energy usage parameters  
23 for predicting an impact on energy usage by the client computer system that  
24 would result from prefetching specified files;

25  
26                   a prefetch prediction engine coupled to the prefetch prediction  
27 model for evaluating the specified files with respect to prefetch criteria,  
28 including energy efficiency prefetch criteria, and generating a prefetch  
29 decision with respect to each file of the specified files;  
30

1           instructions for storing in a queue entries identifying each  
2 specified file for which the prefetch prediction engine generates an  
3 affirmative prefetch decision; and  
4  
5           instructions for fetching files identified by entries in the queue.  
6  
7

8           32.   A computer system comprising:  
9

10           at least one processing unit for executing procedures containing  
11 executable instructions;  
12

13           a server module, executable by the at least one processing unit,  
14 for responding to a request from a client computer for a specified file and for  
15 generating a reply to the request, the reply including a content portion  
16 comprising the specified file; and  
17

18           a prefetch predictor, executable by the at least one processing  
19 unit, for identifying additional files for possible prefetching by the client  
20 computer;  
21

22           the server module including instructions for including in a  
23 supplemental portion of the reply to the request from the client computer  
24 prefetch hint information identifying at least one of the additional files,  
25 wherein the supplemental portion is distinct from the content portion of the  
26 reply.  
27  
28

29           37.   A computer program product for use in conjunction with a  
30 client computer system having at least one application having instructions  
31 for specifying files to be fetched from a server, the computer program  
32 product comprising a computer readable storage medium and a computer  
33 program mechanism embedded therein, the computer program mechanism  
34 comprising:  
35

36           a prefetch prediction model including cost parameters for  
37 predicting an impact on monetary charges incurred by the client computer  
38 system that would result from prefetching specified files;  
39

1 a prefetch prediction engine coupled to the prefetch prediction  
2 model for evaluating the specified files with respect to prefetch criteria,  
3 including cost efficiency prefetch criteria, and generating a prefetch decision  
4 with respect to each file of the specified files;

5  
6 instructions for storing in a queue entries identifying each  
7 specified file for which the prefetch prediction engine generates an  
8 affirmative prefetch decision; and

9  
10 instructions for fetching files identified by entries in the queue.

### 11 12 C. REFERENCES

13 The references relied upon by the Examiner in rejecting the claims on  
14 appeal are as follows:

15	Malkin	US 6,085,193	Jul. 4, 2000
16	Shinozaki	US 6,173,392 B1	Jan. 9, 2001
17	Saxena	US 2002/0103778 A1	Aug. 1, 2002
18			(Filed Dec. 6, 2000)
19	Shatil	US 6,728,840 B1	Apr. 27, 2004
20			(Filed Oct. 20, 2000)

### 21 22 D. REJECTION(S)

23 The Examiner entered a Final Rejection with the following rejections  
24 which are before us for review:

25 Claims 1-31, and 37-39 are rejected under 35 U.S.C. § 103(a) as being  
26 unpatentable over Shatil in view of Saxena;

27 Claims 32-34 are rejected under 35 U.S.C. § 103(a) as being  
28 unpatentable over Malkin in view of Shatil; and

Claims 35 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Malkin in view of Shatil and further in view of Shinozaki.<sup>2</sup>

## II. PROSECUTION HISTORY

Appellants appealed from the Final Rejection and filed an Appeal Brief (Br.) on August 28, 2006. The Examiner mailed an Examiner's Answer (Answer) on November 1, 2006. Appellants filed a Reply Brief (Reply Br.) on January 3, 2007.

### III. ISSUE(S)

Whether Appellants have shown that the Examiner erred in rejecting claims 1-39 as being obvious over the combination of cited references.

## IV. FINDINGS OF FACT

The following findings of fact (FF) are supported by a preponderance of the evidence.

## *Invention*

1. The Specification discloses that “the prefetch prediction model 118 preferably includes two or more of the following types of parameters: CPU energy usage parameters 160, for instance indicating CPU energy usage per prefetch . . . Network interface energy usage parameters 162, for instance

<sup>2</sup> On page 16 of the Examiner's Answer, the Examiner noted that the Final Action mailed [February] 26, 2006 contained a typographical error. Claims 35 and 36 are rejected over Malkin in view of Shatil and further in view of Shinozaki.

1 network interface fixed energy required to send a packet . . . Memory access  
2 energy usage parameters 163, for instance memory read/write energy costs  
3 per byte or word . . . Energy supply parameters 164, for instance total energy  
4 availability . . .” (Spec., 6-7).

5

6 *Shatil*

7 2. Shatil discloses that the system “create rule-like prefetch criteria  
8 entries . . . to govern caching operations.” (Col. 12, ll. 27-30.)

9 3. Shatil discloses that “[t]he example prefetch database 220 includes  
10 columns of prefetch criteria including ‘requester criteria’ 401, ‘data access  
11 technique criteria’ 402, ‘data criteria’ 403 and optionally, one or more  
12 columns of ‘other criteria’ 404.” (Col. 16, ll. 56-61: Fig. 5.)

13

14 *Saxena*

15 4. Saxena discloses that a “transaction weight represents the  
16 importance of the link and associated web page to the origin server and may  
17 be used to control the prefetching of web pages by the cache server.”  
18 (Abstract.)

19

## 20 V. PRINCIPLES OF LAW

21 The scope of patentable subject matter under section 101 is broad, but  
22 not infinitely broad. “Congress included in patentable subject matter *only*  
23 those things that qualify as ‘any ... process, machine, manufacture, or  
24 composition of matter, or any ... improvement thereof....’” *In re*  
25 *Warmerdam*, 33 F.3d 1354, 1358 (Fed. Cir. 1994) (quoting 35 U.S.C.  
26 § 101) (emphasis added). Thus, “[d]espite the oft-quoted statement in the

1 legislative history of the 1952 Patent Act that Congress intended that  
2 statutory subject matter ‘include anything under the sun that is made by  
3 man,’[citation omitted], Congress did not so mandate.” *Id.*

4 Appellants have the burden on appeal to the Board to demonstrate  
5 error in the Examiner’s position. See *In re Kahn*, 441 F.3d 977, 985-86  
6 (Fed. Cir. 2006) (“On appeal to the Board, an applicant can overcome a  
7 rejection [under § 103] by showing insufficient evidence of prima facie  
8 obviousness or by rebutting the prima facie case with evidence of secondary  
9 indicia of nonobviousness.”) (quoting *In re Rouffet*, 149 F.3d 1350, 1355  
10 (Fed. Cir. 1998)).

11 “Section 103 forbids issuance of a patent when ‘the differences  
12 between the subject matter sought to be patented and the prior art are such  
13 that the subject matter as a whole would have been obvious at the time the  
14 invention was made to a person having ordinary skill in the art to which said  
15 subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727,  
16 1734 (2007). The question of obviousness is resolved on the basis of  
17 underlying factual determinations including (1) the scope and content of the  
18 prior art, (2) any differences between the claimed subject matter and the  
19 prior art, (3) the level of skill in the art, and (4) where in evidence, so-called  
20 secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18  
21 (1966). See also *KSR*, 127 S. Ct. at 1734 (“While the sequence of these  
22 questions might be reordered in any particular case, the [*Graham*] factors  
23 continue to define the inquiry that controls.”)



VI. ANALYSIS

*Grouping of Claims*

In the Brief, Appellants argue claims 1-31 as a group. In other words, for claims 2-31, Appellants merely repeat the same argument made for claim 1. Thus, the Board selects representative claim 1 to decide the appeal for this group. 37 C.F.R. § 41.37(c)(1)(vii)(2006). Accordingly, the remaining claims in this group stand or fall with claim 1.

Appellants argue claims 37-39 as a group. For claims 38 and 39, Appellants repeat the same argument made for claim 37. We will, therefore, treat claims 38 and 39 as standing or falling with claim 37.

Appellants argue claims 32-36 as a group. For claims 33-36, Appellants repeat the same argument made for claim 32. We will, therefore, treat claims 33-36 as standing or falling with claim 32. *See* 37 C.F.R. § 41.37(c)(1)(vii). *See also In re Young*, 927 F.2d 588, 590 (Fed. Cir. 1991).

*The Board's Claim Construction*

"Our analysis begins with construing the claim limitations at issue." *Ex Parte Filatov*, No. 2006-1160, 2007 WL 1317144, at \*2 (BPAI 2007).

Claims are given their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

We note that Appellants have identified several "energy usage parameters" in the Specification, all of which appear to look at the "energy required" and/or "energy cost" for performing a particular act (FF 1). Therefore, we find that Appellants have defined the claimed term "energy

1 usage parameters” broadly to include any power requirements and/or costs  
2 required to performed specific tasks.

3

4 *The Obviousness Rejection*

5 *Regarding Claim 1*

6 We now consider the Examiner’s rejection of claims 1-31 under  
7 35 U.S.C. § 103(a) as being obvious over the combination of Shatil and  
8 Saxena.

9 "Having determined what subject matter is being claimed, the next  
10 inquiry is whether the subject matter would have been obvious." *Ex Parte*  
11 *Massingill*, No. 2003-0506, 2004 WL 1646421, at \*3 (B.P.A.I 2004). The  
12 question of obviousness is "based on underlying factual determinations  
13 including . . . what th[e] prior art teaches explicitly and inherently . . . ." *In*  
14 *re Zurko*, 258 F.3d 1379, 1383 (Fed. Cir. 2001) (citing *Graham v. John*  
15 *Deere Co.*, 383 U.S. 1, 17-18 (1966); *In re Dembiczak*, 175 F.3d 994, 998  
16 (Fed. Cir. 1999); *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995)). "In  
17 rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden  
18 of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d  
19 1531, 1532 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445 (Fed.  
20 Cir. 1992)). "A *prima facie* case of obviousness is established when the  
21 teachings from the prior art itself would appear to have suggested the  
22 claimed subject matter to a person of ordinary skill in the art." *In re Bell*,  
23 991 F.2d 781, 783 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048,  
24 1051 (CCPA 1976)).

25 Appellants contend that “[w]hile Shatil is drawn to a prefetch engine  
26 using prefetch criteria, Shatil fails to teach or suggest energy usage

1 parameters.” (Br. 8.) Appellants further contend that “Saxena, like the  
2 remaining prior art of record, fails to cure the deficiencies of Shatil, because  
3 Saxena also fails to teach or suggest energy usage parameters. The  
4 Applicants note that the Examiner has not attempted to allege that Saxena  
5 teaches or suggests energy usage parameters.” (Br. 9.)

6 The Examiner responds that “Shatil et al teaches of comparing access  
7 data against prefetch criteria, which can include various types of data  
8 including energy efficiency data and is not limited and does not exclude any  
9 type of possible criteria including energy usage parameters.” (Answer 14.)  
10 We disagree.

11 We are in agreement with Appellants that Shatil fails to specifically  
12 disclose energy usage parameters that represent power usage or costs  
13 required to perform particular actions. Instead, Shatil merely discloses  
14 criteria entries for requesters, data access techniques, data type, file sizes,  
15 time requirements, and user designations (FF 2-3). The Examiner has failed  
16 to specifically show that Shatil’s criteria make any reference to power  
17 consumption or cost. The Examiner’s conclusionary statement that Shatil’s  
18 prefetch criteria can include energy efficiency data can not be a substitute  
19 for evidence in the record. Therefore, we reverse this rejection.

20  
21 *Regarding Claim 37*

22 Appellants contend that “cost is not a factor used in Saxena to make a  
23 prefetch determination, but only the ‘importance of web pages,’ which is not  
24 based on cost or monetary charges. In contrast, claims 37-39 recite the use  
25 of ‘cost parameters for predicting an impact on monetary charges incurred  
26 by the client computer system.’” (Br. 10.) Appellants further contend that

1 “Saxena fails to teach or suggest ‘predicting an impact on monetary charges  
2 incurred by the client computer system,’ as recited in independent claims 37-  
3 38. Saxena specifically discloses that the ‘origin server is paying for  
4 caching services.’ Therefore, Saxena only discloses using importance as a  
5 factor in relation to the origin server and not a client machine.” (Br. 11.)

6 The Examiner responds that “Saxena teaches . . . transaction weight  
7 feature, which may comprise of a numeric or other indication of weight,  
8 which is widely known to include various indicators including cost.”  
9 (Answer 15.) We disagree.

10 Again, we find that the Examiner’s conclusionary statement that the  
11 numeric transaction weight feature is widely known to include cost can not  
12 be a substitute for evidence in the record. Here, the Examiner has failed to  
13 show any cost factors in Saxena. Saxena discloses a transaction weight that  
14 merely represents the importance of the link (FF 4). We find that while  
15 Saxena’s “importance factor” may be used to control prefetching, the  
16 Examiner has failed to establish that such a factor is equivalent to “cost  
17 parameters for predicting an impact on monetary charges.”

18 Therefore, we reverse this rejection.

19  
20 *Regarding Claim 32*

21 Appellants contend that “Malkin and Shinozaki . . . fail to teach or  
22 suggest energy efficient criteria. The Examiner . . . does not even attempt to  
23 allege that this feature is taught or suggested by Shinozaki.” (Br. 12.)

24 Appellants further contend that “claim 36 recites ‘predicting an impact on  
25 energy usage by the client computer.’ The Examiner . . . fails to address it.”  
26 (Br. 12.)

1       The Examiner states that Malkin fails to teach of using an energy  
2 efficiency criteria and instead notes that Shatil teaches using various types of  
3 criteria to allow access to files. (Answer 12 and 15) We disagree.

4       Moreover, the Examiner applies the same reasoning as used in the  
5 rejection of claim 1, as noted *supra*. Therefore, we reverse this rejection for  
6 the same reasons as noted *supra* regarding claim 1.

7  
8       VII. NEW GROUND OF REJECTION UNDER 35 U.S.C. § 101

9       In addition to reversing the Examiner's rejection of claim 1-39, this  
10 decision, pursuant to our authority under 37 C.F.R. § 41.50(b), contains a  
11 new ground of rejection.

12       On February 6, 2006, the Examiner rejected claims 1-10 and 37 under  
13 35 U.S.C. § 101 because "[t]he specification refers to a computer program  
14 product not tangibly embodied by the transmission of a computer data signal  
15 on a carrier wave." (Final Office Action, 2.)

16       In response, Appellants argued at page 6 of the Brief that "the  
17 Examiner failed to fully consider the language of independent claims 1 and  
18 37, because claims 1 and 37 specifically recite that the computer program  
19 product is embodied in a 'computer readable storage medium.'" Appellants  
20 go on to argue on the same page that "[t]he only reference to a carrier wave  
21 within the originally filed specification occurs with respect to the description  
22 of software modules, which may also be included in the computer program  
23 product. The specification states that software modules may be distributed  
24 by computer data signals on a carrier wave." Appellants then conclude on  
25 page 7 that "claims 1-10 and 37 comply with the provisions of 35 U.S.C.  
26 § 101 and the rejection must be withdrawn."

1 In turn, the Examiner concluded that the arguments overcame the  
2 rejection under 35 U.S.C. § 101. The rejection was withdrawn at page 2 of  
3 the Answer. We disagree with the Examiner's conclusion for the reasons  
4 discussed *infra*, and we apply the rejection of claims 1-10 and 37 anew.

5 Claims 1-10 and 37 are rejected under 35 U.S.C. § 101 because the  
6 claimed invention is directed to non-statutory subject matter. Claims 1 and  
7 37 are reproduced *supra*, are representative.

8 Specifically, claims 1 and 37 are directed to “[a] computer program  
9 product . . . comprising a computer readable storage medium...” and  
10 Appellants explicitly states that the “. . . program modules may be stored on  
11 a CD-ROM, magnetic disk storage product, or any other computer readable  
12 data or program storage product. The software modules in the computer  
13 program product may also be distributed electronically, via the Internet or  
14 otherwise, by transmission of a computer data signal (in which the software  
15 modules are embedded) on a carrier wave. (Spec., 13.)

16 We find that Appellants' description of a 'computer readable storage  
17 medium' expressly implicates carrier waves and signals.

18 That said, the issue, quite simply, is whether a claimed computer  
19 readable storage medium that is broad enough to include transmission-type  
20 media – a media that includes carrier waves and signals – is statutory subject  
21 matter. We have argued that a carrier wave or signal is not statutory subject  
22 matter because it does not fall within any of the four categories of statutory  
23 subject matter. *See In re Petrus A.C.M. Nuijten*, --- F.3d ---, (2007 WL  
24 2728397) (Fed. Cir. Sept. 20, 2007). In this instance, claims 1 and 37  
25 includes both statutory and non-statutory subject matter that, according to

1 recent proposed USPTO interim guidelines, must be amended to recite  
2 solely statutory subject matter.<sup>3</sup>

3 Even if as carrier wave or signal could be considered to be an article  
4 of manufacture, however, we find that such a carrier wave or signal does not  
5 operate as the claimed computer readable storage medium. Claims 1 and 37,  
6 for example, recites a computer readable medium having instructions for  
7 causing a client computer to execute a method. As a result, it is our view  
8 that the computer cannot perform the claimed functions while the  
9 instructions are embodied on a carrier wave or a signal. In other words, the  
10 information, while on the carrier wave or signal, is unavailable to the  
11 computer for performing the functions recited in the claims.

12 For the above reasons, we find that claims 1 and 37 recite non-  
13 statutory subject matter. The “medium” of claims 2-10 shares the same  
14 interpretations as discussed *supra* for “medium” in claim 1. For the reasons  
15 *supra*, we conclude that claims 1-10 and 37 are also directed to non-statutory  
16 subject matter.

17  
18 *37 C.F.R. § 41.50(b)*

19 37 C.F.R. § 41.50(b) provides that, “[a] new ground of rejection  
20 pursuant to this paragraph shall not be considered final for judicial review.”

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<sup>3</sup> See also “Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility,” 1300 Off. Gaz. Pat. Office 142, Annex IV(C)(2)(Nov. 22, 2005) (“[A] claim that can be read so broadly as to include statutory and nonstatutory subject matter must be amended to limit the claim to a practical application.”).





1       No time period for taking any subsequent action in connection with  
2 this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R.  
3 § 1.136(a)(1)(iv) (2006).

4  
5                                   REVERSED

6                                   37 C.F.R. § 41.50(b)  
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